

IN THE CLAIMS

Claims 1-12 (cancelled).

13. A water softener connected to a source of water, comprising:
 - a. a brine tank;
 - b. a resin tank;
 - c. a resin bed disposed in said resin tank;
 - d. a piping system connecting said brine tank to said resin tank;
 - e. salt selection means for selecting a salt type from a plurality of salt types;
 - f. water quantity means for calculating and measuring a quantity of water based on said selected salt type; and
 - g. means for connecting said brine tank to the source of water,
 - h. whereby said brine tank is filled with said quantity of water to form a brine, and said brine may be transferred through said piping system to said resin tank to regenerate said resin bed.
14. The water softener claimed in claim 13 including
 - a. a temperature sensor disposed in said brine tank for measuring the temperature of the brine therein;
 - b. said water quantity means includes means for calculating a theoretical fill time based on said temperature; and
 - c. means for filling said brine tank with water for an amount of time at least as great as said theoretical fill time.
15. A water softener, comprising:
 - a. a resin tank;
 - b. a resin bed disposed in said resin tank;
 - c. a brine tank for preparing a salt solution for regenerating the resin bed;
 - d. a piping system connecting said brine tank to said resin tank;
 - e. salt selection means for selecting a regenerative salt type from a plurality of salt types;

- f. water dispensing means for measuring and placing either a first quantity of water in the brine tank when a first salt type is selected or a second quantity of water in the brine tank when a second salt type is selected, said second quantity of water being greater than the first quantity of water; said water interacting with a salt in the brine tank to form a brine;
- g. means for connecting said brine tank to a source of water;
- h. brine draw means for withdrawing brine from the brine tank and running the brine to the resin tank and through the resin bed, whereby the resin bed is washed with a first quantity of brine having a volume substantially equal to the first quantity of water if the first salt type is selected and a second quantity of brine having a volume substantially equal to the second quantity of water if the second salt type is selected.

16. In a water softener having a resin tank, a resin bed disposed in the resin tank, a brine tank intended to contain a salt for regenerating the resin bed, the improvement comprising: a brine feed-water selection means for selecting either a predetermined first quantity of water or a variable second quantity of water, either of said quantities to be added to the brine tank during regeneration, the first water quantity being associated with a first salt type, the second water quantity being associated with a second salt type, the second water quantity being greater than the first water quantity.

17. The water softener of Claim 16 wherein the second water quantity is between 10.2% and 27.2% greater than the first water quantity.

18. The water softener of Claim 16 wherein the second water quantity is about 25% greater than the first water quantity.

19. The water softener of Claim 15 and including a temperature sensing means for determining the temperature of the brine, and wherein the water dispensing means adjusts the

quantity of water for the second water quantity whereby it is substantially equal to $2Q=1Q+1QRT$, wherein $2Q$ equals the second water quantity and $1Q$ equals the first water quantity and R equals an adjustment rate per degree Fahrenheit of the brine below 80 degrees Fahrenheit and T equals the temperature of the brine in degrees Fahrenheit, and the adjustment rate is in the range of 0.0054 to 0.0058.

20. In a water softener having a resin tank, a resin bed disposed in the resin tank, and a brine tank for preparing a brine for regenerating the resin bed, the improvement comprising:

- a. a brine feed-water means for filling the brine tank with water to prepare a brine;
- b. a temperature sensing means for determining the temperature of the brine; and
- c. adjustment means coupled with the feed-water means and the temperature sensing means for changing the quantity of water fed into the brine tank in accordance with the temperature sensed by the temperature sensing means.

21. The water softener of Claim 20 wherein the adjustment means adjusts the water quantity at a rate substantially equal to -0.0029 times the temperature sensed.

22. The water softener of Claim 20 wherein the brine feed-water adjustment means adjusts the water quantity substantially in accordance with -0.0077 times the temperature sensed.

23. The water softener of Claim 20 including a salt selection means, the salt selection means being coupled with the adjustment means, wherein the adjustment means adjusts the water quantity at a rate per degree change in the temperature sensed, said rate being substantially in accordance with $(\text{the solubility quotient} - 1) \text{ divided by } 40$, wherein the solubility quotient equals the solubility at 80°F of the salt selected divided by the solubility at 40°F of the salt selected.

Claims 24-33 (cancelled).